

UMBRELLA ASSEMBLY STRUCTURED FOR USE IN HIGH WIND CONDITIONS

BACKGROUND OF THE INVENTION

Claim of Priority

The present application is based on and a claim to priority is made under 35 U.S.C. Section 119(e) to provisional patent application currently pending in the U.S. Patent and Trademark Office having Serial No. 60/447,122 and a filing date of February 13, 2003.

Field of the Invention

This invention relates to an umbrella assembly structured for use in a strong wind environment such as, but not limited to, the conditions frequently encountered on a moving boat or like marine craft. The frame of the umbrella assembly includes a reinforcing assembly disposed and structured to provide increased structural integrity sufficient to resist forces to which the umbrella assembly may be subjected when the marine craft is traveling at relatively high speeds. Adaptive structuring of the frame assembly facilitates the selective positioning thereof in either the substantially conventional open or closed orientations, even when the water craft is moving.

DESCRIPTION OF THE RELATED ART

1 All types of are boats or other marine craft are of course
2 structured, for travel on bodies of water where there are no
3 trees or other natural structures to provide shade. Given the
4 heat and other harsh effects of the sun, there is a clear and
5 frequent need to provide some shade or other protection to the
6 boat occupants. As such, larger boats whether sailboats,
7 cruisers, yachts, etc. are typically formed to have one or more
8 cabins or other interior areas. Smaller pleasure boats, on the
9 other hand, must often rely on lightweight sometimes foldable
10 shade structures, sometimes referred to as "bimini tops", which
11 can be difficult to maneuver and/or somewhat flimsy.

12 For example, many smaller boats suitable for water skiing
13 and cruising are provided with a main seating area protected by
14 a windshield typically located on a forward portion of the
15 craft. In addition, these types of boats often include a
16 foldable shade structure having movable poles that are removably
17 connected to opposite sides of the boat, near the windshield's
18 outer edges. The poles normally span the width of the boat and
19 include a fabric canopy or like structure attached thereto to
20 provide shade. While apparently functional for numerous
21 applications, this type of shade structure is not readily
22 adaptable for use on a significant number of boats such as, but
23 not limited to a marine craft known as an "open fisherman".
24 This is at least partially due the placement of the poles
25 interfering with movement of the boat's occupants while fishing,

1 or other situations requiring a need to travel freely about the
2 periphery of the boat. In order to overcome problems of this
3 type "open fisherman" and similarly designed marine craft
4 typically include a centrally located steering and/or console
5 area with a pair of closely spaced, fixed and rigid upstanding
6 posts. A fixed awning or canopy structure is attached to and
7 spans the distance between the posts' upper ends to provide
8 shade. This type of structure allows for a clear path of travel
9 about the boat's periphery including along the port and
10 starboard sides.

11 While these types of fixed shade structures are quite
12 common and accepted, there are obvious and long recognized
13 disadvantages or inconveniences associated therewith. For
14 instance, there are times while fishing in certain environments,
15 such as in shallow waters, when it is desirable to not have any
16 shade structure so as to allow for better maneuverability and/or
17 visibility. Of course, those situations may be temporary or
18 relatively short in duration, particularly if the day is hot and
19 sunny, when it is soon desirable to have some shade readily
20 available. As another example, because many known shade
21 structures, such as the types set forth above, are fixed, there
22 is no practical way to adjust the amount and or position of
23 available shade created by these structures. Therefore, there
24 is little one can do to protect against the sun's rays at
25 various times. Also, it can be difficult to clean the awning

1 and/or canopy on these types of rigid shade structures. These
2 and other inconveniences associated with conventional shade
3 structures used on the "open fisherman" type of boats,
4 frequently lessen the enjoyment one would normally expect while
5 using such craft. With regard to a totally distinct field
6 of art, namely, that relating to umbrellas, it is known to use
7 large, upstanding, outdoor umbrellas at restaurants, bars,
8 hotels, and other places that offer outdoor seating so as to
9 shield people from the sun, as well as from other elements of
10 nature, such as wind, light rain, etc. While these types of
11 outdoor umbrellas are designed to endure many relatively harsh
12 outdoor conditions, they are typically not structured to
13 overcome more extreme conditions including, but not limited to
14 substantially constant and/or strong wind conditions frequently
15 associated with open bodies of water. Also, many umbrellas
16 known in the art do not allow for any adjustment in terms of
17 increasing or decreasing the amount of shade being cast by the
18 canopy of the umbrella.

19 It is believed by the inventor herein that there has never
20 been a successful effort to develop a shade structure capable of
21 being used on boats or other marine craft which has the
22 efficiency, operational versatility and convenience offered by
23 umbrellas. Of course, if any such improved shade structure were
24 provided for use on boats, the high wind and other conditions
25 unique to boating would have to be addressed. Such conditions

1 should also include anchoring and support requirements
2 sufficient to withstand the rocking motion and/or other movement
3 of the boat as well as prolonged exposure to the sun's rays.
4 Other features associated with such an improved shade structure
5 should preferably include ease of positioning into and out of an
6 operable and/or stored orientation, whenever desired, whether
7 for certain fishing conditions, cleaning, repair, etc. Further,
8 an improved shade structure especially, but not exclusively, of
9 the type capable of being used on an "open fisherman" type of
10 boat, should be structured to permit free travel about the
11 periphery of the boat. Finally, such an improved shade
12 structure should also be ideally capable of at least some
13 adjustment to provide shade against the sun's rays at various
14 times of the day.

16 SUMMARY OF THE INVENTION

17 The present invention is intended to present a solution to
18 some of the problems in this field of art, and as such, relates
19 to an umbrella frame structured for use under strong wind
20 conditions of the type frequently, but not exclusively,
21 encountered on boats or other marine craft. More in particular,
22 the present invention comprises, in at least one embodiment, a
23 frame assembly including an elongated support pole generally
24 terminating in a bottom end and a top end. The bottom end is
25 structured for attachment to any one of a plurality of different

1 bas structures so as to be supported thereby, wherein the base
2 is capable of being mounted or connected to a marine craft.

3 In addition, one or more preferred embodiments of the
4 umbrella assembly of the present invention include the frame
5 assembly having a plurality of ribs movably connected to the
6 support pole by means of a hub assembly, wherein the ribs are
7 disposed and structured to support a canopy thereon. The frame
8 assembly also includes a plurality of struts movably connected
9 to the support pole by virtue of the aforementioned hub assembly
10 and also connected to the plurality of ribs. In somewhat
11 conventional fashion the plurality of ribs and hubs are
12 collectively structured to allow selective orientation of the
13 frame assembly, as well as the shade producing canopy supported
14 thereon, between an open, outwardly extended position and a
15 closed, substantially collapsed position.

16 As set forth above, a primary object of the umbrella
17 assembly of the present invention is to be effectively operable
18 under relatively unusual conditions such as, but not limited to,
19 strong wind conditions which may be continuously encountered on
20 a marine craft while the marine craft is traveling, even at
21 relatively high speeds. Accordingly, the umbrella assembly of
22 the present invention further comprises a reinforcing assembly
23 connected to the frame and more specifically structured and
24 disposed in a supporting orientation relative to the plurality
25 of ribs and the plurality of struts. Moreover, the reinforcing

1 assembly includes at least one but more practically a plurality
2 of auxiliary struts. Each of the auxiliary struts are
3 strategically disposed and structured to significantly increase
4 the structural integrity of the frame assembly specifically and
5 the umbrella assembly generally. The umbrella assembly is
6 thereby sufficiently reinforced to withstand the high wind
7 conditions in a boating or marine craft environment, as well as
8 in a variety of other environments which may encounter strong
9 winds or other extreme conditions.

10 The dimension and configuration of the umbrella assembly,
11 specifically including the frame assembly, as well as its
12 various structural and operational components, may vary greatly
13 dependent at least in part on the marine craft on which it is
14 mounted. By way of example only, at least one embodiment of the
15 umbrella assembly of the present invention is structurally
16 adaptable for use on an "open fisherman" type of boat, wherein
17 the efficient creation of shade as well as the freedom of
18 movement of the occupants about the boat are significant
19 considerations. However, it is emphasized that the umbrella
20 assembly of the present invention is not intended to be limited
21 for use on an "open fisherman" type of marine craft. To the
22 contrary, with little or no structural modification other than
23 variation in the dimension or configuration, various embodiments
24 of the umbrella assembly of the present invention can be used on
25 any of a variety of marine craft or on land where strong winds

1 and other relatively extreme environmental conditions are
2 encountered.

3 Increased versatility of the umbrella assembly of the
4 present invention is further demonstrated by the provision of a
5 canopy having a variety of different sizes and shapes and which
6 may be supported by the frame assembly in a selectively movable
7 and adjustable manner. This latter feature facilitates the
8 creation of an adequate amount of shade for a variety of
9 different boating or other environments as well as the ability
10 to adjust the shaded area on a marine craft depending upon the
11 orientation of the craft itself as well as the position of the
12 sun in the sky. At the same time, the plurality of ribs as well
13 as other operative components of the frame assembly may be
14 cooperatively disposed and structured to orient the canopy, when
15 the frame assembly is in an open position, into a substantially
16 "zero horizon" or outwardly extending, flat orientation. Such
17 a preferred orientation of the canopy will reduce exposure of
18 the canopy and minimize wind resistance when subjected to strong
19 wind conditions. This feature will facilitate use of the
20 umbrella assembly, even when the marine craft on which it is
21 mounted is traveling at speeds of up to 50 m.p.h.

22 23 BRIEF DESCRIPTION OF THE DRAWINGS

24 For a fuller understanding of the nature of the present
25 invention, reference should be had to the following detailed

1 description taken in connection with the accompanying drawings
2 in which:

3 Figure 1 is a perspective view of one preferred embodiment
4 of an umbrella assembly of the present invention.

5 Figure 1-A is a perspective view in partial cutaway of a
6 preferred embodiment of the umbrella assembly of the present
7 mounted on a marine craft.

8 Figure 2 is a front view in partial phantom and section of
9 a portion of one embodiment of a frame assembly of the umbrella
10 assembly of the present invention.

11 Figure 3 is a perspective view in exploded form of a hub
12 assembly associated with at least one embodiment of the frame
13 assembly of the present invention.

14 Figures 4 and 5 are front and side cutaway views
15 respectively, of an assembled hub assembly of the embodiment of
16 Figure 3.

17 Figure 6 is a partial, cutaway and perspective view of
18 correspondingly positioned and interconnect strut and a rib
19 members of the frame assembly of the present invention.

20 Figure 6A is a detailed view of a pull pin connector
21 associated with the interconnecting means illustrated in Figure
22 6.

23 Figure 7 is a detailed side view of the embodiment of
24 Figure 1 wherein a portion of the frame assembly includes a
25 reinforcing assembly including auxiliary strut members disposed

1 in an operative, supporting orientation.

2 Figure 8 is a detailed front view of the embodiment of
3 Figure 7 with the auxiliary strut members disposed in an at
4 least partially disconnected orientation.

5 Figure 9 is a partial bottom view of the frame assembly
6 illustrated in Figure 1, including the rib and strut members
7 associated the support of a canopy.

8 Figure 10 is a top view in partial phantom of one of a
9 plurality of configurations which the canopy may assume
10 utilizing a different embodiment of the frame assembly of the
11 present invention.

12 Figure 11 is a top plan view of yet another embodiment
13 demonstrating one of a plurality of shapes the canopy may assume
14 utilizing another different embodiment of frame assembly of the
15 present invention.

16 Figure 12 is a top plan view of yet another embodiment
17 demonstrating one of a plurality of shapes the canopy may assume
18 utilizing yet another embodiment of the frame assembly of the
19 present invention.

20 Figure 13 is yet a top plan view of another embodiment
21 demonstrating one of a plurality of shapes the canopy may assume
22 utilizing yet another embodiment of the frame assembly of the
23 present invention.

24
25 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

1 The present invention is directed to an umbrella assembly
2 generally indicated as 10 and comprising a frame assembly shown
3 in detail in Figures 2 through 8 of the accompanying drawings.
4 As will be more fully explained, the frame assembly and the
5 various operative components associated therewith are
6 specifically structured to support an umbrella canopy 20 and
7 facilitate its opening and closing. More specifically, the
8 umbrella assembly 10 includes a elongated support pole 12 which
9 is normally, but not exclusively, operatively disposed in a
10 substantially upright and/or vertical orientation when the frame
11 assembly is an open position as demonstrated in Figures 1, 1-A
12 and partially in Figure 2. The lower end of the support pole 12
13 is secured to a base generally indicated as 14, 14' in Figures
14 1 and 1A. The base 14, 14' may assume any of a variety of
15 different structures and/or configurations capable of supporting
16 the pole 12 and the remainder of the frame assembly in a stable
17 manner, especially when in an operative position as
18 demonstrated.

19 As shown in Figure 1A, to be described in greater detail
20 hereinafter, the base 14' is structured to be mounted on or
21 attached to a marine craft 15 so as to facilitate the mounting,
22 operation and use of the umbrella assembly 10 on the craft 13,
23 even when the craft is traveling at relatively high speeds.
24 Also a preferred embodiment of the base 14, 14' is structured to
25 removably support the pole 12 thereby allowing the frame

1 assembly to be removed therefrom, such as when the umbrella
2 assembly 10 is intended to be stored or removed for cleaning,
3 repair, etc. As such, the base 14, 14' may assume any of a
4 variety of different structures, dimensions and configurations,
5 any one of which may be adapted to be mounted on or connected to
6 a predetermined portion of the boat 15, dependent on the
7 intended application of the umbrella assembly 10. Moreover, the
8 specific structural features of the base 14' will vary dependant
9 upon the intended location of the umbrella assembly 10 on the
10 boat 13 and also on the type of boat or marine craft on which
11 the umbrella assembly 10 is intended to be used.

12 While the present invention is not specifically limited to
13 a particular type of boat, one embodiment of the umbrella
14 assembly 10 is especially well suited for use on a type of boat
15 commonly known as an "open-fisherman." This type of boat is
16 typically provided with a centrally located steering or console
17 area about which the occupants of the boat are free to move so
18 as to perform various activities including, but not limited to
19 fishing. Therefore and by way of example, the location the
20 umbrella assembly 10, as at least partially demonstrated in
21 Figure 1A, will provide a significant amount of shade to the
22 deck area of the boat 15 and the occupants thereon.
23 Concurrently, the size, configuration and location of the
24 umbrella assembly 10 will not interfere with the freedom of
25 movement of an appropriate number of occupants about the boat

1 15. As set forth above, the umbrella assembly 10 may be easily
2 and quickly removed from the base 14, 14' so as to facilitate
3 storage of the umbrella assembly 10, such as when one or more
4 occupants of the boat require total freedom of movement and/or
5 an unobstructed view. Also, it is emphasized that the boat or
6 marine craft 15, at least partially disclosed in Figure 1A, is
7 intended to be generically representative of various types of
8 marine craft including, but not limited to, the aforementioned
9 "open fisherman" on which the umbrella assembly 10 may be
10 mounted and used. Naturally, the location, size and
11 configuration of the umbrella assembly 10 may vary greatly at
12 least partially dependent on the type, size, etc, of the marine
13 craft.

14 As set forth above, the umbrella assembly 10 comprises a
15 frame assembly disclosed in detail in Figures 2 through 8. Many
16 of the operative components disclosed in these drawings have
17 been described in detail and are the subject of a presently
18 pending U.S. patent application, Serial No. 10/008,536 having
19 a filing date of November 13, 2001. Additional structural and
20 operative features of the umbrella assembly 10 of the present
21 invention are also disclosed in another currently pending U.S.
22 patent application, having Serial No. 29/153,828, filed in the
23 U.S. Patent and Trademark Office on January 11, 2002. Both of
24 these presently pending patent applications and their contents
25 are incorporated herein in their entirety by reference. As

1 of boat. Further the umbrella assembly 10 and its operative
2 frame assembly is specifically structured to allow travel of the
3 boat through water at relatively high speeds while the umbrella
4 assembly 10, and more particularly, the canopy 20 is maintained
5 in an open or expanded position as demonstrated in Figures 1, 1-
6 A, 7 and 8. One feature of the umbrella assembly 10 is the
7 orientation of the canopy structure 20 in the open position,
8 wherein the canopy 20 is structured to assume a substantially
9 outwardly extending, flat profile. A flat profile, while
10 providing significant shade to the occupants of a boat, also
11 offers a minimal amount of wind resistance, especially while the
12 boat is traveling at relatively high speeds.

13 Therefore, as shown in Figures 2 and 7-9, a most preferred
14 embodiment of the present invention comprises a plurality of
15 support struts 22 having their inner or proximal ends pivotally
16 secured to the hub assembly and specifically the main hub member
17 18. The outer ends of each of the support struts 22 are secured
18 to a correspondingly positioned, outwardly extending rib 24.
19 Somewhat similarly, the proximal end of the rib 24 is pivotally
20 secured to a secondary hub or yoke type structure 26 as
21 explained in detail with reference to Figures 2 through 6. As
22 set forth in detail in the currently pending patent applications
23 noted above and included herein by reference, the plurality of
24 struts 22 may vary in number and length. Similarly the number
25 of ribs 24 may also vary in number and dimension dependant upon

1 the overall configuration which the canopy 20 is intended to
2 assume. With reference to Figures 10 through 13, a plurality of
3 configurations of the canopy 20 are demonstrated. However the
4 plurality of configurations disclosed are by way of example
5 only, in that a number of different configurations may be
6 assumed by the canopy 20 dependant upon the size, number,
7 dimension, etc. of the plurality of ribs 24 and their associated
8 conventional supporting struts 22.

9 With further reference to the hub assembly and as described
10 in detail in the above referenced, presently pending patent
11 applications, the main hub 18 and the secondary hub 26 may be
12 movable such as being rotatable about the pole 12. This allows
13 the plurality of ribs 24, the plurality of struts 22 and the
14 canopy 20 to be selectively or otherwise rotated about the pole
15 12. Therefore, the "location" of the shade created by the
16 canopy 20 can be changed to cover different areas on the boat or
17 other environment in which the umbrella assembly 10 is located.
18 This adjustability feature may be particularly advantageous when
19 the canopy structure has a configuration of the type disclosed
20 in Figures 10 through 13.

21 In order to increase the strength and structural integrity
22 of the frame assembly and thereby by provide proper and adequate
23 support to the canopy structure 20, especially during high wind
24 conditions, a reinforcing assembly generally indicated as 29 in
25 Figures 7 through 9 is provided. The reinforcing assembly 29

1 facilitates the maintenance of the canopy 20 in an open
2 condition during the aforementioned high wind conditions, such
3 as when the boat 15 travels at relatively high speeds. More
4 specifically, the reinforcing assembly 29 includes at least one,
5 but more practically, a plurality of auxiliary struts 30 which
6 also may be loosely referred to as "wind struts". The number of
7 auxiliary struts 30 is preferably equal to the number of
8 correspondingly positioned, interconnected struts 22 and ribs
9 24. For purposes of clarity, each of the plurality of
10 correspondingly positioned ribs 24 and struts 22 can be
11 considered and referred to herein as a correspondingly
12 positioned pair of ribs and struts 24 and 22 respectively. As
13 such each of the plurality of ribs 24 is supported by a
14 correspondingly positioned strut 22, which is disposed in
15 interconnecting relation between that respective rib 24 and the
16 main hub member 18.

17 With specific reference to the reinforcing assembly 29, the
18 plurality of auxiliary ribs 30 are easily and selectively
19 positionable between a supporting, operative orientation as
20 shown in Figure 7 and a non-supporting orientation as shown in
21 Figure 8. In addition, each of the auxiliary struts 30 is
22 preferably formed from a high strength, light weight material,
23 such as, but not limited, to aluminum. The length of the
24 auxiliary struts 30 may vary dependant on the intended, overall
25 shape of the canopy 20. As set forth above, the configuration

1 assumed by the canopy 20 when in its expanded or open position
2 may vary greatly as demonstrated in Figures 1, 1-A, and 10
3 through 13. Therefore, dimension, location and number of the
4 conventional support struts 22 may also vary to properly orient
5 the canopy 20 in the aforementioned preferred configuration.
6 Correspondingly, the number, dimension and overall structure of
7 each of the plurality of auxiliary struts 30 may vary
8 accordingly. When in their operative orientation as shown in
9 Figure 7, each of the auxiliary struts are interconnected to a
10 different one of the correspondingly positioned pair of ribs and
11 struts 22 and 24 respectively. More specifically, when in an
12 operative orientation, the auxiliary struts 30 are
13 interconnected between one of the of support struts 22 and ribs
14 24.

15 Moreover, in order to facilitate quick and easy positioning
16 of the plurality of auxiliary struts 30 in their operative,
17 position shown in Figure 7, a proximal end 32 of each auxiliary
18 strut 30 is moveably (or removably) connected to the
19 corresponding rib member 24 preferably at a location
20 substantially adjacent the hub member 18. The opposite or
21 distal end 34 of each of the auxiliary struts 30 is preferably
22 removably connected to a correspondingly positioned rib 24
23 substantially at or adjacent the distal end of the rib 24. As
24 such, each of the auxiliary struts 30 may be quickly and easily
25 pivoted into and out of their supporting orientation of Figure

1 7, as indicated by phantom directional arrows 60 of Figure 8.
2 Yet another embodiment of the present invention comprises the
3 auxiliary struts 30 being removably connected at both their
4 proximal ends 32 and their distal ends 34, such that when
5 positioning the canopy 20 in a closed orientation for storage,
6 detachment and removal of the auxiliary struts 30 from the
7 position shown in Figure 8 may be easily and accomplished.

8 Removable connection of each of the opposite ends of 32 and
9 34 of each of the plurality of the auxiliary struts 30 can
10 readily be accomplished by a connector assembly somewhat similar
11 to that represented in Figure 6, and generally indicated as 40.
12 Structural modifications of the connector assembly 40 of the
13 type used to moveably attach or connect both of the ends 32 and
14 34 to correspondingly position struts 32 and ribs 24 include the
15 use of a "pull-pin" connector member of the type shown in Figure
16 6A and generally indicated as 42. The pull-pin connector 42
17 would include a loop or like member 44 on which a pulling force
18 could be exerted, wherein the elongated shaft 46 would pass
19 through the aligned apertures as at 48 formed in both in the
20 connector assembly 40 and the opposite ends 32 and 34 of the
21 auxiliary strut 30. Upon removal of the plurality of auxiliary
22 struts 30, they could be collectively stored with or in the
23 general vicinity of the closed umbrella assembly 10 aboard the
24 boat or other water craft 15 on which the umbrella assembly 10
25 is mounted.

1 However, while one embodiment of the present invention
2 comprises the removal of the auxiliary struts 30 it is
3 emphasized that the struts 30 can remain in the orientation of
4 Figure 8 and allow for the closing of the umbrella assembly 10
5 with the struts 30 still maintained in their non-supporting
6 orientation. In this latter embodiment, the same or
7 substantially similar connecting assembly 40 and 42 of Figures
8 6 and 6A can be used to pivotally or otherwise movably connect
9 the proximal end 32 to a corresponding strut 22, as described
10 above. With reference to Figure 9, only a single auxiliary
11 strut 30 is disclosed in its operative, supporting position for
12 purposes of clarity. More specifically, the auxiliary strut 30
13 includes its proximal end 32 movably and/or removably connected
14 to the correspondingly positioned, conventional support strut 22
15 and its opposite or proximal end 34 removably and moveably
16 connected to the correspondingly disposed rib 24.

17 Therefore, the umbrella assembly 10 includes specific
18 structural modifications which distinguishes it from a
19 conventional umbrella assembly at least in part due to an
20 umbrella frame assembly which allows it to be quickly secured to
21 and removed from a base 14, 14', wherein the base 14' can be
22 secured to or generally considered a part of a boat 15 such as,
23 but not limited to, an open-fisherman boat. Further, the
24 operative and structural features of the umbrella assembly 10
25 allow it to be maintained in its open position during high or

1 strong wind conditions such as wind conditions encountered when
2 the boat 15 is traveling at relatively high speeds.
3 Concurrently, the canopy 20 can remain in the open position
4 during travel of the marine craft 15 thereby providing shade to
5 the occupants in almost any environment in which the boat is
6 used.

7 The present invention may be embodied in other specific
8 forms without departing from the spirit or essential
9 characteristics thereof. Therefore, the embodiment(s) presented
10 herein to illustrate this invention are to be considered in all
11 respects as illustrative and not restrictive. In other words,
12 the scope of the invention should not be limited by the
13 foregoing description, but rather, should be considered as in
14 connection with following claims, and all modifications or other
15 changes which come within the meaning and range of equivalency
16 of these claims are therefore intended to be embraced therein.